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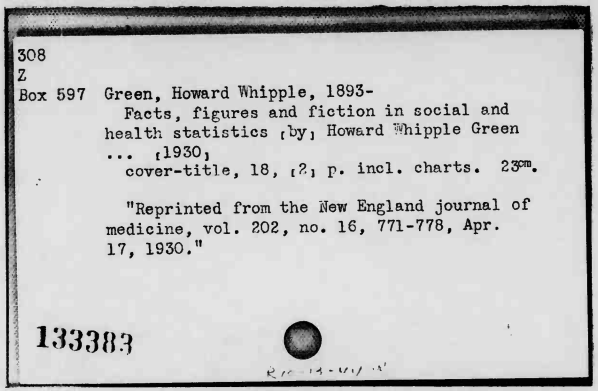

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Facts, Figures and Fiction in Social and Health Statistics

HOWARD WHIPPLE GREEN, S.B.

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Reprinted from the New England Journal of Medicine
Vol. 202, No. 16, pp. 771-778, Apr. 17, 1930

FACTS, FIGURES AND FICTION IN SOCIAL AND HEALTH STATISTICS*

BY HOWARD WHIPPLE GREEN, S.B.

I SUPPOSE Fiction has been used in this title as a synonym for Statistics in order not to repeat the word Statistics.

I would rather reverse the order to Fiction, Figures and Facts in Social and Health Statistics. Haven't we had Fiction long enough in our Social and Health Statistics? As an example of Fiction take the statement that the length of life has been enormously increased during the past 3 decades. When the figures are analyzed by a statistician canny enough not to be led astray by the crude figures, we are shown that practically the entire increase in length of life occurs in the younger age-groups, especially in the group under 1 year and therefore the length of life as ordinarily understood, i.e., our expectancy, has changed but little.

Facts are being more and more recognized as the proper basis for planning all health and welfare activities.

The census tract or sanitary district by which population is analyzed and demographical data collected is of considerable assistance in determining this fact basis for community planning, be it for health, for social work or for commercial endeavors.

"Why Census Tracts?" — The composition and characteristics of the population of each Ward are given in the published volumes of the Bureau of the Census for 1900, 1910, 1920, and these data will shortly be published for 1930.

*Read at the annual meeting of the Boston Health League, February 13, 1930.

There were 42 wards in Cleveland in 1900, 26 in 1920, and there are 33 in 1930. However, a careful scrutiny of the maps indicates that none of the Wards of 1910 was the same as in 1900 and while there were 26 wards in 1910 and the same number in 1920, none of them was comparable and the 1930 wards with one exception were different from the 1920 wards. Therefore, in order to obtain a geographical unit constant over the years for which population data may be obtained and other data may be collected the Census Tract or Sanitary District is most valuable.

"How originated?" — The Census Tract or Sanitary District was originated in 1902 by the Federated Churches in New York City because they found that the Boroughs of New York, there being no wards, were entirely too large in both area and population to aid in solving the neighborhood problems with which that organization was faced. The Federated Churches obtained the interest of the Bureau of Census and in 1910,—the 9 cities in the United States having a population of half a million or more were enumerated by census tracts. The State census of New York utilized the areas in the 1915 enumeration and the Federal Government again utilized them in 1920.

The Federation of Churches being most interested in this project, published the population data for 1910 for New York City by Census Tracts and in 1920 other individuals and organizations shared this burden through the New York City 1920 Census Committee, Incorporated. Cleveland was the second city to become interested in the Census Tract populations and the Cleveland Health Council early in 1925 approved of my proceeding with this work. Chicago about the same time started to obtain Census Tract data from the Bureau of the Census and Detroit, taking a special official census at

the expense of local organizations but supervised by the Bureau of Census, established and utilized Census Tracts in the spring of 1925.

Thus we find in 1929, 10 cities laid out by census tracts for purposes of population enumeration and 3 cities actually have obtained data from the Bureau of Census relative to the composition of the population in each census tract.

A discussion in which I entered at one of the sessions of the National Conference of Social Work in Memphis in 1928, resulted in the speaker who presented a paper returning to St. Louis and later to Washington to interest both cities in this project. The secretary of the section returned to Cincinnati and the chairman to Indianapolis with similar definite determinations. The enthusiasm of utilizing these definite areas for analyzing population data and collecting health and social facts permeated to Columbus, Ohio, and to Omaha. Other cities such as Boston and Buffalo have become likewise interested so that the 1930 census will recognize census tracts in nearly 30 cities throughout the United States.

Your modified map of Boston, I understand, has been accepted by the Bureau of Census. In Cleveland, as in Boston, not wishing to sacrifice the 1910 and 1920 data already collected, we have been forced to accept the areas drawn up by those not particularly interested in the project locally and in fact in the case of Cleveland some 15 years prior to the time when any local groups became interested. For this reason many of the areas are rather irregular and at times quite difficult to handle.

I have attempted to answer the questions, "Why?" and "How?" Now to answer the most interesting question, "Well what about it?"

To answer this question let me briefly describe how we have developed in Cleveland and show you what we have developed.

It was realized that if we could publish a map showing the boundaries of each Census Tract and some basic data regarding each tract we might be able to get the community ready to utilize the data determined by the 1930 enumeration. To this end we published "An Analysis of Population Data by Census Tracts with Location Index, Cleveland and Vicinity" with the necessary maps. This small book gave for each census tract the area, both gross and net, i.e., excluding Industrial and Railroad Property, Parks, Cemeteries, and Public property; the 1910 and 1920 populations; the increases and decreases during the 10 years; the density per gross acre in 1910 and 1920; and per net acre in 1920.

Realizing the impossibility of expecting any organization to throw its material into census tracts unless that process could be greatly facilitated, a street index was included in the book. By means of the street index any office worker can locate by census tracts from 800 to 1500 street addresses a day.

The more detailed analysis of the population of each census tract cost real money to pay for the girls employed by the Bureau of Census in Washington to sort the punch cards, tabulate and check the data. The changes in the boundaries of areas felt to be so imperative and the adjustment of the data for 1910 and 1920 made the estimated amount reach practically $10,000 which was much more money than was visible to our budget committees although they approved of the undertaking.

Feeling that commercial interests should have definite data relative to the composition of population in various sections of the city it was not difficult to obtain the necessary appropriation of outside money.

The data purchased in this way naturally could not be published but has been made available through the Cleveland Health Council to all public and private organizations and to many commercial organizations requesting aid on their various problems. This has been done without in any way infringing upon the confidence of those paying for the data.

In order to make the data most easily usable and available the tabulations received from Washington were rearranged upon 5 sheets, for each census tract. The first sheet shows the analysis of the total population by sex, male, female and total; and by age, under 1, 1-4, and by 5 year age-groups to 85. These data given in the total columns are further analyzed in a similar manner by White, Negro, and other colored. The White is divided into Native Born and Foreign Born; and the Native Born into Native Parentage and Foreign or Mixed Parentage, the latter being analyzed into Foreign Parentage and Mixed Parentage. The data relative to Families, Home Ownership, Citizenship, and Illiteracy is similarly analyzed on the first sheet.

On the second sheet the Foreign Born is further analyzed by post-war country of birth showing male, female, and total populations for each country.

The third sheet is the same as the first but gives the 1910 data.

The fourth sheet is similar to the second except that the 1910 and 1920 foreign born groups are of necessity analyzed by pre-war countries.

The fifth sheet shows the native born of foreign parentage by country of birth of the parents for 1910 and 1920 and of necessity by pre-war countries.

A summary of each census tract is available upon a card making the most common data immediately available.

In 1928 it was felt that 8 years since a census is a long time and a supplement was pub-

lished giving population data estimated for each census tract and based upon enumerations made by two different commercial surveys. Most importance was ascribed to a 1928 enumeration of families made by an industrial interest which in my judgment is second only to the Federal Government in the care with which their data are collected.

It was assumed that the ratio between families and population had changed but slightly between 1920 and 1928 probably less than the necessary differences in the definition of a family. With the 1920 families and population known and the 1928 families just enumerated, the 1928 population estimates were derived. The total estimated population for the entire county was carefully checked and believed to be reasonable. The final proof of the pudding will be determined during the first two weeks in April of this year.

The slides which I shall now show were made from some of the 150 maps showing graphically the population data and data collected by census tracts.

Charts 1, 2, 3, 4.* You will notice that the wards are different at each census period making it impossible to study the changes taking place in any specific section of the city. By state legislation the wards must be changed within 2 years after the census is taken, that is, about the time the data becomes available for each ward new and entirely different wards are in use.

Chart 5 shows the basic data included in the book for each census tract, namely gross and net area, 1910 and 1920 population, increases and decreases during the 10 year period, yearly increment, 1910 and 1920 density per gross acre, and for 1920 per net acre.

Chart 6 shows a sample page of the street

*Charts which do not appear have been omitted for lack of space.

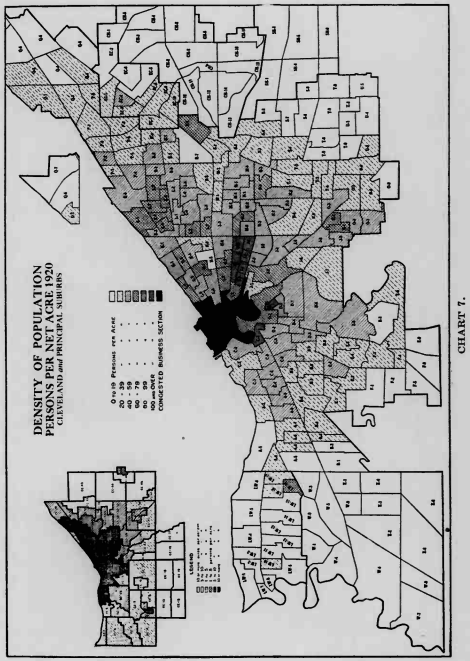

CHART 7.

INTENTIONAL SECOND EXPOSURE

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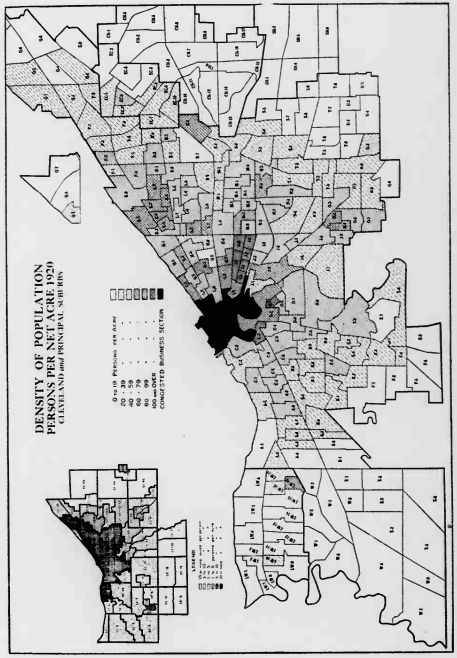


CHART 7.

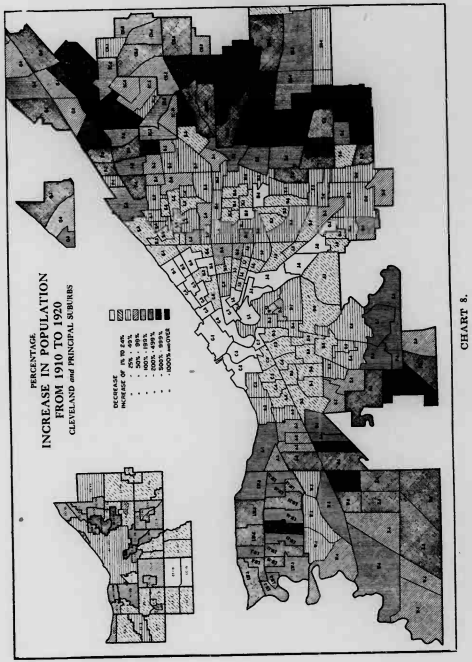


CHART 8.

index. The odd numbers are shown on one side and the even on the other side of the column.

Chart 7 shows that while the density per net acre for the entire city in 1920 was 33 persons the density in certain districts was over 100 persons, in one 141 persons per net acre. This density would not be high for New York City where several census tracts show more than 600 persons per acre, but New York City is built vertically while Cleveland is built horizontally with no high tenement buildings and no "three deckers". The residential areas, even those most congested are largely 2 story houses.

Chart 8 shows the sections of the city which increased considerably between 1910 and 1920, some section-increases of 1,000 per cent. being evident. The sections which have decreased are also shown. These decreasing areas are down the river and along the lake front and are characteristic of a rapidly increasing industrial city being caused by property being vacated for expansions of industry.

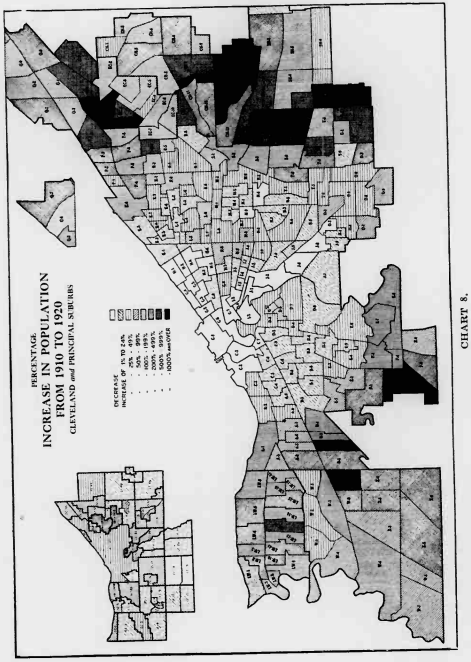
Chart 9 shows that similar changes took place between 1920 and 1928.

Chart 10 shows the distribution of the 1928 estimated population by actual place of residence, the industrial and railroad property being double-shaded and the cemeteries and parks being single-shaded. This style of chart immediately shows relative density of population. The "islands" of population surrounded by industry, railroads, parks and other non-residential property should be noted. These "islands" of population may serve as true neighborhoods when analyzing various data.

Chart 11 shows that many areas in Cleveland are quite foreign with 1, and 2, and 3 per cent. native born white of native parentage, the remaining population being Negro, foreign born or of foreign born parents.

Chart 12 shows why the population of sections

INTENTIONAL SECOND EXPOSURE



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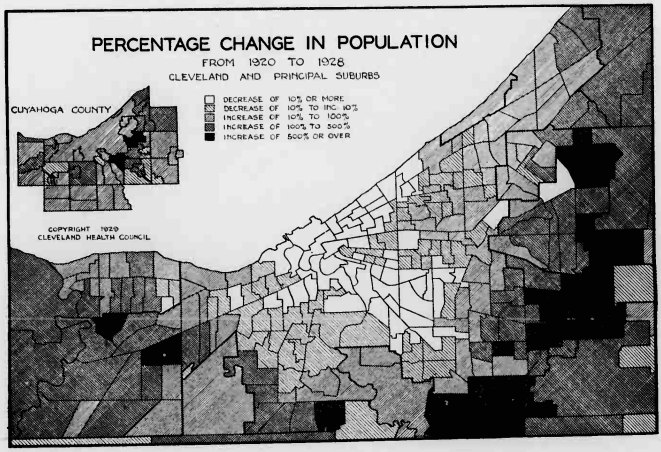

PERCENTAGE CHANGE IN POPULATION
FROM 1920 TO 1928
CLEVELAND AND PRINCIPAL SUBURBS
CUYAHOGA COUNTY
DECREASE OF 10% OR MORE
DECREASE OF 10% TO INC. 10%
INCREASE OF 10% TO 100%
INCREASE OF 100% TO 500%
INCREASE OF 500% OR OVER
COPYRIGHT 1929
CLEVELAND HEALTH COUNCIL

CHART 9.

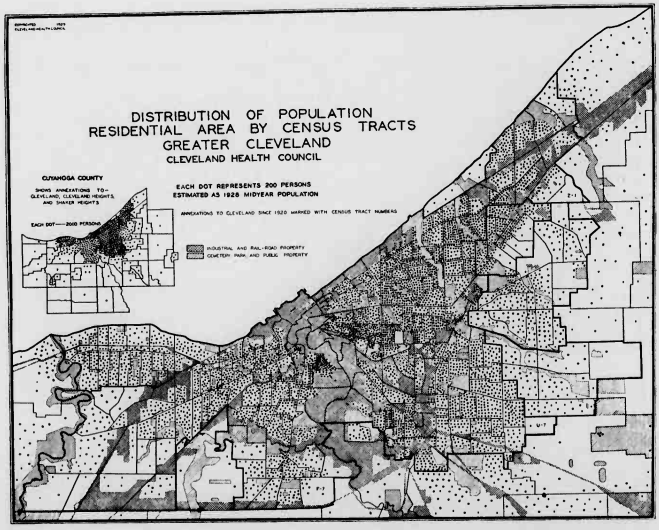

DISTRIBUTION OF POPULATION
RESIDENTIAL AREA BY CENSUS TRACTS
GREATER CLEVELAND
CLEVELAND HEALTH COUNCIL
CUYAHOGA COUNTY
SHOWS ANNEXATIONS TO CLEVELAND, CLEVELAND HEIGHTS, AND SHAKER HEIGHTS
EACH DOT — 2000 PERSONS
EACH DOT REPRESENTS 200 PERSONS
ESTIMATED AS 1928 MIDYEAR POPULATION
ANNEXATIONS TO CLEVELAND SINCE 1920 MARKED WITH CENSUS TRACT NUMBERS
INDUSTRIAL AND RAIL-ROAD PROPERTY
CEMETERY, PARK, AND PUBLIC PROPERTY

CHART 10.

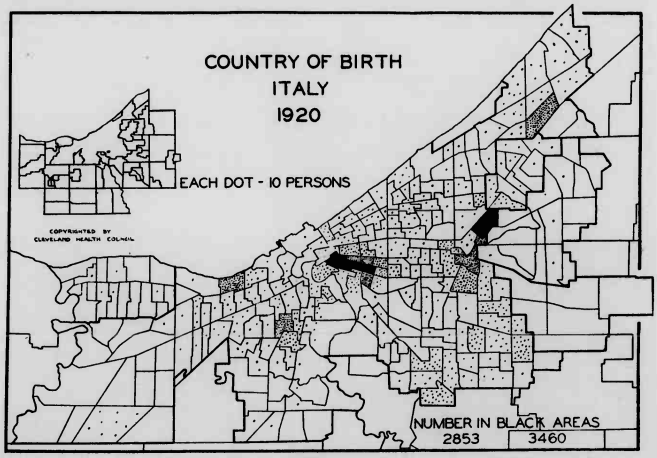


CHART 23.

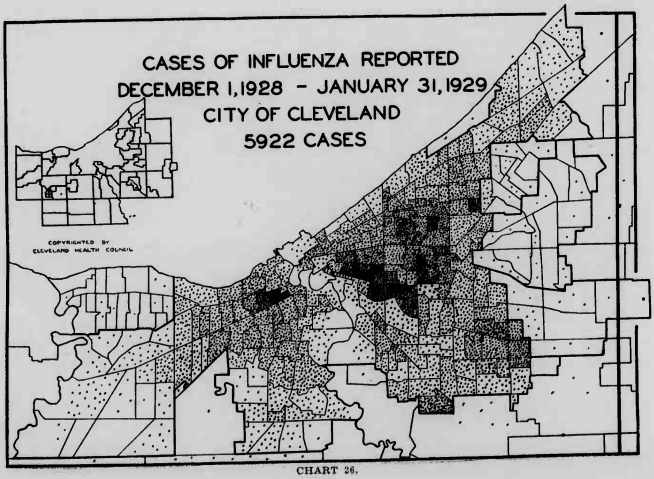
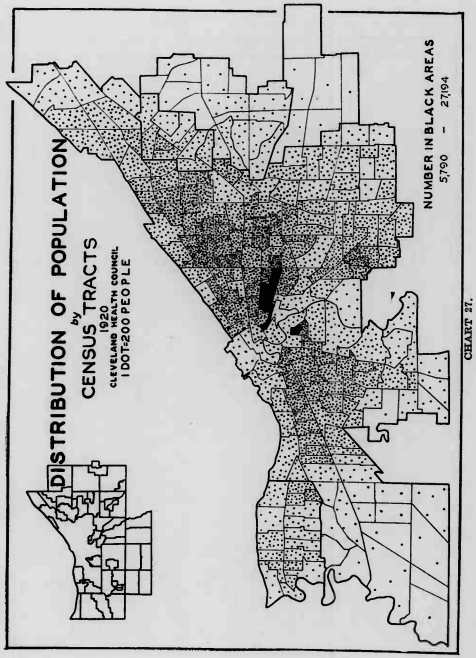


CHART 26.



of a big city can not be estimated by assuming that because the child population for the city as a whole is 30 per cent. of the total population, the child population of each section is 30 per cent. of the total population. This chart shows that it varies from 4 per cent. in G-6 to 50 per cent. in U-5, and you are required to multiply the child population by nearly 20 in one area and by but 2 in another. In 1910 the largest percentage was 46.

Chart 13 shows that while 4 per cent. of the total population and 7 per cent. of the adult population is illiterate, which is not at all high for an industrial city, as much as 40 per cent. and even 54 per cent. of the adult population in certain areas could not read and write any language. And this is not caused by the Negro population for the Negro population is largely made up of young literate people.

Chart 14 shows the ownership of homes by indicating the percentage of homes rented which varies from 100 per cent. rented down to a rather small per cent. rented.

Charts 15 and 16 show the location of the Negro population in 1910 and 1920. Besides showing the increase of Colored population from 8,738 to 34,815 it shows the numbers of Colored people increasing in those areas in 1920 where a nucleus was evident in 1910. The location of the 70,000 Negroes at present may be predicted from these charts and with 1930 data available much more exact prognostications can be made.

Chart 17 shows the location of those 35,024 born in Poland and how they are grouped in certain sections of the city.

Charts 18 to 21 show the grouping of those born in Czecho-Slovakia, Jugo Slavia, Hungary, and Russia. It should be noted that each of these groups lives in a distinctive district. In the south central portion of the city will be found Poles, above them Czechs, then Russians,

then Italians, and Negroes, and along the lake Jugo Slavs.

Charts 22 to 25 show the 1910 distribution of those born in Italy and the 1920 distribution and the 1910 distribution of those born in the United States of parents born in Italy as well as that for 1920. It is interesting but not strange to note that members of the first American born generation live in much the same location as their parents.

Chart 26 shows the distribution of the cases of influenza reported during the 2 months of the epidemic a year ago. Case incidence was not calculated by census tracts but in a research recently published, case incidence was calculated for each of 18 neighborhoods. Also the weekly fluctuations were analyzed for each of these 18 neighborhoods with interesting but as yet not explained results.

Chart 27 shows the distribution of population in a similar manner and a comparison of the two charts makes it possible to make certain observations on relative incidence.

Chart 28 shows the distribution of cases of diphtheria during the epidemic year 1926-1927. It is evident that certain sections had a higher incidence than other sections.

Chart 29 shows the distribution of cases of scarlet fever during the epidemic year 1926-1927.

Chart 30 shows the distribution of the cases of mumps during the epidemic year 1926-1927, but here you have a definite clumping of the cases in the Negro district.

Chart 31 shows chicken pox cases in larger numbers in certain sections.

When definite population data is known for 1930 it will be possible to calculate the incidence for each of these diseases by census tracts or neighborhoods for at least 1929, 1930 and 1931.

Chart 32 shows by means of iso-soot-fall lines

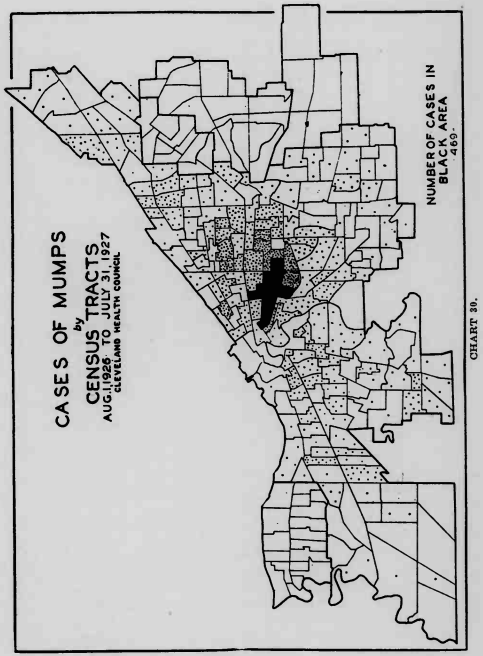


CHART 30.

what sections of the population are being blanketed by tons of soot per square mile per month. The relation of these areas to the industrial areas is worthy of careful study.

Chart 33. The distribution of visits made by public health nurses in various sections of the city is of interest when related to non-residential property.

Chart 34. A housing program may well utilize the census tracts for the distribution of population and of families and information relative to the location of cemeteries, parks, industrial property, schools and churches aids the program.

Chart 35. The distribution of illegitimate births is interesting when colored dots are shown representing color and country of birth of the mothers as on the original chart. The chart shows unduly large numbers of illegitimate births in certain sections.

Chart 36 also shows in similar sections unduly large numbers of families served by the Associated Charities because of desertion.

Chart 37. The distribution of families served by family case work agencies is of particular interest.

Chart 38. These data are of even greater interest as the percentage of the families in each census tract served by family case work agencies is calculated and the several instances in which more than 15 per cent. of the total families are served by such agencies is noted.

With deaths, births, cases of communicable diseases, analyzed by census tracts, summer school population and enumerations of various items made by commercial organizations by census tracts, with public health nursing visits, juvenile court cases, crimes and criminals, Associated Charity cases, unemployment problems, community fund givers all available by census tracts and with the composition and characteris-

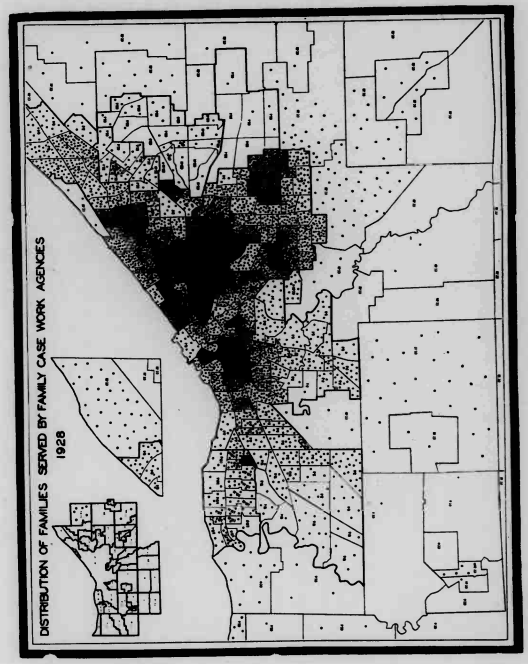


CHART 37.

tics of each census tract known, fundamental changes and improvements are certain to take place.

The census tract analyses are already demonstrating their tremendous value as an aid in planning health and social programs on a fact basis. When rifle methods supplant shotgun methods in health and social work, definite results may be expected.

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